ROYAL ONTARIO MUSEUM OF ZOOLOGY

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DOWN HOUSE, KENT, ENGLAND,

Where Darwin "thought and worked for forty years, and died, 1882". It has recently been presented to the nation, and is now open to the public. *Above,* view from front; *below,* view from garden.

BOHEMIAN AND CEDAR WAXWINGS

The original from which this is reproduced belongs to the Wallace Havelock Robb collection of paintings of Canadian birds by Allan Brooks. Coloured reproductions of twenty-four of the paintings of this collection are available for distribution as described on page 12.

A NATURAL HISTORY BOOK LIST

Although the advice, "Study nature, not books", is, in general, good advice for the naturalist, some books are necessary to every student who would get the most out of his study of nature, or would contribute the most in the way of discovering new facts and new truths about nature.

One of the first services which books can render to the student is to give him the name by which other students recognize the creatures which interest him, whether they be mammals, birds, reptiles, fish, insects or worms. Descriptive books which enable us to identify animals, therefore, usually form the basis of every naturalist's library.

It is also interesting to know what others have observed about the characteristics and habits of living creatures. Such knowledge, too, is useful to the student intent on discovering new facts for himself. The danger is that most people place too much reliance on the statements found in books, and make too few observations of their own, and that is the reason for the exhortation, "Study nature, not books".

In the following pages are listed some of the best books of the different types indicated above. It is not usually possible to say which is the "best" book in any particular field; not only do opinions differ, but requirements differ; the book which would fill one person's need best might be far from the best one for another's purpose. For this reason an attempt has been made in most cases to indicate briefly the nature of the contents of each book listed.

Because of limitations of space, it has been necessary to limit the titles listed to those likely to prove most generally useful. For the same reason, where volumes have been published in a number of editions, only the cheaper editions have been listed. Rare or out-of-print books have been omitted except in a few instances where it seemed desirable to indicate volumes which students in particular fields might find it advisable to secure through second-hand book dealers.

Although every effort has been made to have the information with respect to the publisher, date and price correct, the information cannot be guaranteed as accurate in every case.

MAMMALS

General

ANTHONY, H. E. Field book of North American mammals. Putnam (Nature field books), 1928, $5.00.

Brief descriptive accounts, including life history notes, and distribution, of all North American mammals.

ANTHONY, H. E. (Editor). Mammals of America. (Nature lover's library.) University Soc. Inc., New York.

Describes size, colour, range, food habits, etc., of over five hundred species; profusely illustrated. Sold with "Birds of America" (Nature lover's library) at $6.25 per volume.

CROSS, E. C. and J. R. DYMOND. The mammals of Ontario. Handbook No. 1, Royal Ontario Museum of Zoology, 1929, 25 cents.

This 52-page handbook lists and briefly describes the mammals of the province, indicating how to distinguish closely related forms. There is also included a list of 82 books and other publications of value in the further study of this group.

INGERSOLL, ERNEST. The life of mammals. Macmillan, 1910, $2.35.

Mode of life, history and relationship of mammals.

MILLER, G. S. List of North American recent mammals. U.S. National Museum Bulletin 128, Washington, 1924.

A list of all species and subspecies of North American mammals, with citations of original descriptions, type, localities, and general ranges.

NELSON, E. W. Wild animals of North America. Nat. Geogr. Soc., Washington, 1918, $3.00.

Excellent short accounts of the common wild animals of North America, from bears to mice, with 127 portraits in colour by Louis Agassiz Fuertes.

SETON, E. T. Animals. Doubleday, 1926, $3.50.

The life histories of some sixty wild animals of the United States and Canada, selected from Seton's "Life histories of northern animals", arranged by R. M. McCurdy, with paragraphs on classification, and other excerpts from Stone and Cram's "American animals"; many coloured plates.

SETON, E. T. Life histories of northern animals. Two vols. Scribner, 1909.

A very valuable work on the mammals of the interior of Canada; particularly valuable for life histories.

SETON, E. T. Lives of game animals. Four vols. Doubleday, 1925-1928.

Very complete accounts of life histories, distribution, etc., of game animals; profusely illustrated.

The Bureau of Biological Survey, U.S. Department of Agriculture has published a series of monographs on mammals under the title, "North American Fauna". Some of the more recent of these are as follows:

No. 48. Voles of the genus Phenacomys. A. B. Howell. 1926.

No. 50. Revision of the American lemming mice. A. B. Howell, 1927.

No. 51. A taxonomic review of the American long-tailed shrews. H. H. T. Jackson, 1928.

No. 52. Revision of the American chipmunks. A. H. Howell, 1929.

POPULAR WORKS ON INDIVIDUAL SPECIES OR GROUPS

BRANCH, E. DOUGLAS. The hunting of the buffalo. Appleton, 1929, $3.00.

The story of the buffalo, how the Indians hunted it, the coming of the white man, the building of the railroads, and the massacre of the buffalo for meat and hides.

HINTON, M. A. C. Rats and mice as enemies of mankind. Economic Series No. 8, 2nd ed., British Museum (Natural History), 1920.

MERRILL, SAMUEL. The moose book. Dutton, 2nd ed., 1920, $6.00.

NEWSON, WM. H. White-tailed deer. Scribner, 1926, $3.00.

ROOSEVELT, T., T. S. VAN DYKE, D. G. ELLIOT and A. J. STONE. The deer family. Macmillan, 1903. $2.00.

Experiences in hunting deer, antelope, wapiti, moose and elk.

WARREN, E. R. The beaver; its work and ways. Williams & Wilkins, 1927, $3.00.

"The first scientific, comprehensive work on the beaver in fifty years."

WHITNEY, CASPER and others. Musk-ox, bison, sheep and goat. Macmillan, $2.00.

For additional references, see Cross and Dymond's "Mammals of Ontario".

BIRDS

GENERAL

The most generally useful books to those interested in bird study in Canada are "Birds of Eastern Canada", and "Birds of Western Canada", by P. A. Taverner, of the National Museum of Canada, Ottawa.

In connection with the descriptions of the birds in these books, there are given accounts of the field marks by which the different species may be recognized when seen at a distance, and the characteristics by which each species may be distinguished from the bird which looks most like it. These books are attractively illustrated with coloured plates. They should be ordered from Mr. Wyatt Malcolm, Geological Survey, Department of Mines, Ottawa, Ontario.

Reed's pocket-size "Bird guides" are very useful, especially in the field. Each species is illustrated in colour and there are brief descriptions of the bird, its habits, nesting, etc. These books are as follows,— Land birds east of the Rockies; Water and game birds; Western bird guide; Doubleday, about $1.25 each.

"Handbook of birds of eastern North America", by F. M. Chapman, (Appleton, 1923, $4.00), and "Handbook of birds of the Western United States", by F. M. Bailey (Houghton, $6.00), are indispensable to anyone taking more than the most general interest in birds. Descriptions and general treatment are in greater detail than those given in more popular books. Keys are given for identification, no matter what the sex, season, or age of the specimen may be.

ALLEN, ARTHUR A. The book of bird life. Van Nostrand, 1930, $3.50.

This "bird book" by the Professor of Ornithology at Cornell University emphasizes the habits and haunts of birds. It deals with such sub-

jects as the home life of birds, courtship, nest building and care of young, and suggests methods of bird study and of attracting and photographing birds.

ALLEN, GLOVER, M. Birds and their attributes. Marshall Jones, 1928, $3.50.

This excellent book contains chapters on some human relations with birds; feathers; birds' colours and their uses; bills, feet, wings and bones; the food of birds; origin and distribution of birds; some ecological relations of birds; eggs and nests of birds; some parasitic habits of birds; the senses and behaviour of birds; flight and song; birds at rest; bird migration; nomenclature and classification.

CHAPMAN, F. M. Bird life. Appleton, 1924, $5.00.

An elementary treatment of the biology of birds,—the bird's place in nature and relation to man, structure, colours, migration, voice, nesting; descriptions of the commoner birds of eastern America with 75 coloured plates.

ELIOT, W. A. Birds of the Pacific coast. Putnam, (Nature field books), 1923, $3.50.

HALES, B. J. Prairie birds. Macmillan, 1927, $2.50.

Descriptive of the birds of the Canadian prairie provinces, their distribution, breeding habits and migrations.

HOWARD, H. E. Territory in bird life. John Murray, London, 1920.

Deals with the habits of birds during the period of nesting. In the case of many species it is suggested that each pair of nesting birds establishes and maintains a fairly definite domain of its own.

MARSH, E. L. Birds of Peasemarsh. Musson, 1919, $1.65.

An account of the birds of a small sanctuary in the Georgian bay region of Ontario, with some account of the need for bird protection and how to attract birds by food, drinking fountains, nesting material, nesting boxes, etc.

MATHEWS, F. SCHUYLER. Field book of wild birds and their music. Putnam, (Nature field books), $3.50.

NICHOLSON, E. M. How birds live. Williams and Norgate, London, 2nd ed., 1927.

Deals with such subjects as the relationship of birds to other forms of life, struggle for existence, function of birds of prey, mortality, bird communities, song, courtship, etc.

NICHOLSON, E. M. The study of birds. Benn's sixpenny library, No. 66, 15c.

A brief consideration of various phases of ornithology,—how to observe, bird census, bird protection, etc., well worth reading.

PEARSON, T. GILBERT (editor). Birds of America. (Nature lover's library), University Soc. Inc., New York.

Describes a thousand species; three hundred shown in colours; six hundred black-and-white drawings and photographs. Three volumes, $6.25 per volume.

SAUNDERS, A. A. Bird Song. Handbook 7, New York State Museum, Albany, 75c.

THOMSON, A. L. Birds: an introduction to ornithology. Nelson, (Home university library), $1.00.

A general account of the characteristics of birds as living creatures, as an introduction to their further study; deals mainly with their habits and behaviour, and to a lesser extent with external characters in their relation to modes of life.

FOR THE ADVANCED STUDENT

ALEXANDER, W. B. Birds of the ocean. Putnam, (Nature field books), 1928, $3.50.

A handbook for voyagers containing descriptions of all the sea-birds of the world, with notes on their habits and guides to their identification.

BENT, A. C. Life histories of North American birds.

The United States National Museum, Washington, D.C., is publishing a series of bulletins descriptive of the life histories of North American birds. Those issued to date are as follows,—

Bulletin	107,	Life	histories	of	North	American	diving birds.
"	113	"	"	"	"	"	gulls and terns.
"	121	"	"	"	"	"	petrels and pelicans and their allies.
"	126	"	"	"	"	"	wild fowl, part 1.
"	130	"	"	"	"	"	wild fowl, part 2.
"	135	"	"	"	"	"	marsh birds.
"	142	"	"	"	"	"	shore birds, part 1.
"	146	"	"	"	"	"	shore birds, part 2.

BROOKS, ALLAN, and H. S. SWARTH. A distributional list of the birds of British Columbia. Pacific Coast Avifauna No. 17, Cooper Ornithological Club, Berkeley, Calif., 1925.

A list of the species reported from British Columbia with literature citations of occurrence.

COUES, ELLIOTT. Key to North American birds. 2 vols., 5th edition, 1903. Out of print.

Essential to the advanced student, "The most generally accepted authority on American birds . . . . . A final court of appeal of the majority of ornithologists".

EATON, E. H. Birds of New York. 2 vols.

A reprint edition of this fine work was issued in 1923 and is sold in sets only at $6.00 for the two volumes, postage to Canada $2.10 extra. Altogether, 411 species are described, and their habits, ecological relations, distribution and economic importance discussed. There is also issued in portfolio form a set of the 106 coloured plates published in the two volumes. These plates are by Louis Agassiz Fuertes. The set is sold at $1.40 post paid to Canada.

FORBUSH, E. H. Birds of Massachusetts and other New England states. Mass. State Bd. Agric.

The three volumes of this excellent work may be obtained at $5.00 per volume from the Secretary of the Commonwealth, Room 118, State House, Boston, Mass. This is one of the best general works on the birds of a limited area, in this case of the New England States. It is illustrated by numerous finely reproduced paintings by Louis Agassiz Fuertes and Allan Brooks.

NEWTON, ALFRED. A dictionary of birds. London. Adam and Chas. Black, 1893-1896.

Account of ornithology arranged alphabetically as: Anatomy, bittern, buzzard, cassowary, crane, digestive system, dotterel, eggs, embryology, extermination, eye, falcon, flight, etc.

SAUNDERS, A. A. A distributional list of the birds of Montana. Pacific Coast Avifauna No. 14, Cooper Ornithological Club, Berkeley, Calif., 1921.

Useful to Saskatchewan and Alberta students.

THOMSON, J. ARTHUR. The biology of birds. Macmillan, 1923, $5.00.

Useful to the general reader interested in natural history, as well as to the special student.

Check-list of North American Birds, prepared by a committee of the American Ornithologists' Union.

The fourth edition of this check-list is to be published in 1930. It contains a list of all North American birds with a brief description of the distribution of the various species.

Protection and Attraction

Hiesemann, M. How to attract and protect wild birds. Witherby, London, 1s. 6d.

An account of methods used so successfully on certain estates in Germany.

Miner, Jack. Jack Miner and the birds, and some things I know about nature. Ryerson Press, 1923.

An account of the work of Jack Miner and his sanctuary at Kingsville, Ontario.

The following two very useful pamphlets may be obtained free, on application to the Canadian National Parks Branch, Department of the Interior, Ottawa.

Taverner, P. A. Bird houses and their occupants.

Describes types of bird houses suitable for different kinds of birds.

Merriman, R. O. Attracting birds with food and water.

Describes devices for attracting birds about the house, both in summer and in winter.

Excellent accounts of methods of attracting birds and of the principles of bird conservation are included in Forbush's "Useful birds and their protection", and "Game birds, wild fowl and shore birds", listed elsewhere.

Economic Value

"Birds, a national asset", and "Lessons on bird protection", pamphlets distributed free by the Canadian National Parks Branch, Department of the Interior, Ottawa, and "Birds in relation to agriculture", Extension Bulletin No. 52, Manitoba Department of Agriculture, Winnipeg, deal with the value of birds to agriculture. The chapter on Birds in Relation to Agriculture, in Hewitt's "The Conservation of the wild life of Canada" (listed under Conservation), gives an excellent summary of the whole subject.

The United States Department of Agriculture has published many reports on the economic value of birds. A catalogue and price list of such publications may be obtained from the Superintendent of Documents, Government Printing Bureau, Washington, D.C.

FORBUSH, E. H. Useful birds and their protection. Mass. State Bd. Agric.

An account of the value of birds in agriculture and forestry, with methods for attracting them and increasing their numbers.

HENDERSON, JUNIUS. The practical value of birds. Macmillan, 1927, $3.00.

One of the best books on the economic value of birds.

WEED, C. M., and DEARBORN, NED. Birds in their relations to man. 3rd ed., Lippincott, 1924, $3.50.

A manual of economic ornithology.

MIGRATION

CHAPMAN, F. M. The travels of birds. Appleton, 1916, 80c.

Birds as travellers, why they travel, dangers by the way, night flyers and day flyers, etc.

THOMSON, A. L. Problems of bird migration. Houghton, 1926, $5.00.

Gives an authoritative account of the many facts that have been gathered about this subject, and discusses the fascinating problems they present.

WETMORE, ALEXANDER. The migrations of birds. Harvard Univ. Press, 1927, $2.50.

A summary of present knowledge of migration with the various factors that affect it in its broader aspects.

GAME BIRDS

BEEBE, WILLIAM. Pheasants, their lives and homes. 2 vols., 32 illustrations in colour. Doubleday, 1926. Out of print.

FORBUSH, E. H. Game birds, wild fowl and shore birds. Mass. State Bd. Agric., 1912.

Describes the different species of game birds, wild fowl and shore birds and gives an account of their former abundance and present numbers, and discusses their conservation; refers especially to Massachusetts and adjacent states, but useful for other regions.

JOB, H. K. Propagation of wild water-fowl. Bull. 3, Nat. Assoc. of Audubon Societies, N.Y., 25c.

SANDFORD, L. C. and others. The water-fowl family. Macmillan, $2.00.

SANDYS, EDWYN. Sporting sketches. Macmillan, 1905.

The author, a native of Chatham, Ont., was a recognized authority on game birds.

SANDYS, EDWYN, and T. S. VAN DYKE. Upland game birds. Macmillan, 1924, $2.00.

Adventures hunting partridge, grouse, ptarmigan, turkey, plover and crane, are combined with much scientific information.

CAGE BIRDS AND PETS

BUTLER, A. G. Foreign birds for cage and aviary. Pts. I and II, "Feathered World", 9 Arundel St., Strand, London.

CRANDALL, LEE S. Pets and how to care for them. Clark and Fritts, 3rd ed., 1930, $2.00 plus postage.

Covers the care of pets generally; section 1, dogs, cats, rabbits, etc., section 2, canaries, parrots, pigeons, pheasants, sea-fowl, etc., section 3, the aquarium and aquarium fishes.

WETMORE, ALEXANDER. Canaries, their care and management. Farmers' Bull., 1327, U.S. Dept. of Agric.

Contains a list of books on the care of canaries.

OTHER AIDS TO BIRD STUDY

Excellent coloured reproductions of bird paintings by the Canadian artist, Allan Brooks, are sold by the Royal Ontario Museum of Zoology. These pictures, which are 9 by 11 inches in size, are beautifully reproduced and are suitable for framing for home or school. They are sold in lots of twelve at $1.00 per set.

First series includes Baltimore oriole, ruby-throated hummingbird, goldfinch, blue jay, loon, ruffed grouse, screech owl, flicker, chickadee and white-breasted nuthatch, belted kingfisher, scarlet tanager, bluebird.

Second series includes horned grebe, herring gull and common tern, great blue heron, mourning dove, osprey, downy woodpecker, nighthawk, kingbird, purple finch, barn swallow and cliff swallow, redstart, house wren and winter wren.

The Museum has also issued a four-page leaflet on Winter Birds. This leaflet describes more than a dozen of the common

winter birds, telling the sort of place in which each kind should be looked for. Identification is made easy by the inclusion of nine pen-and-ink drawings of the birds discussed. Single copies, 5 cents; three copies for 10 cents; in lots of 25 or more, one cent each.

A set of 60 post cards containing coloured reproductions of paintings by Allan Brooks and F. C. Hennessey, is sold for one dollar by the National Museum of Canada, Ottawa.

The National Association of Audubon Societies, 1974 Broadway, New York, sell postcard-size reproductions of bird pictures by Allan Brooks in sets of 50 at $1.00 per set, as follows,—

Set No. 1. Fifty winter birds of eastern North America.
Set No. 2. Fifty spring birds of eastern North America.
Set No. 3. Fifty summer birds of eastern North America.

The National Association of Audubon Societies also issues "Pocket bird collections", which are 4-page folders, 5 × 8 inches in size, containing coloured illustrations of common birds drawn to uniform scale. Those of use in Canada are:—

No. 1. Permanent resident and winter visitant land birds of the northeastern states. 63 birds.
No. 3. Early spring migrant land birds of the eastern United States. 74 birds.
No. 4. Common winter land birds of the western United States. 84 birds.

These sets are useful either for classroom study or for field identification. They sell at ten cents per set.

REPTILES AND AMPHIBIANS

BARBOUR, THOMAS. Reptiles and amphibians. Houghton, 1926, $3.50.

"In this volume I have tried to set forth as simply as possible the various modifications, both in form and in habit, which living reptiles and amphibians have acquired by evolutionary processes to enable them the better to meet varied environmental conditions."

DICKERSON, M. C. The frog book. Doubleday. Out of print.

An account of the structure and habits of the frogs, toads and tree frogs of North America.

DITMARS, R. L. The reptile book. Doubleday. Out of print.

An account of the structure and habits of the snakes, lizards, turtles and crocodiles of North America.

DITMARS, R. L. Reptiles of the world. Macmillan, 1922, $4.75.

A general account of the structure, classification and habits of reptiles.

RUTHVEN, A. G., C. THOMPSON, and H. T. GAIGE. The herpetology of Michigan. Mich. Handbook Series No. 3, Univ. Museums, Univ. Mich., Ann Arbor, 1928, $1.50.

Brief accounts of the natural history of all the species of amphibians and reptiles occurring in Michigan, with keys for identification. As most of the species found in Michigan are also found in Ontario, this publication is very useful to Ontario students.

STEJNERGER, L.L., and THOMAS BARBOUR. A check list of North American amphibians and reptiles. 2nd ed., Harvard University Press, 1923, $3.50.

A list with the nomenclature at present in use and the distribution in brief of all North American species.

WRIGHT, A. H. North American Anura. Pub. 197, The Carnegie Institution of Washington, Washington, D.C., 1914.

Life histories of the frogs, tree frogs and toads of Ithaca, N.Y.

FISHES

BREDER, C. M. Field book of marine fishes of the Atlantic coast. Putnam (Nature field books), $5.00.

Short descriptive accounts of the fishes found in the waters of the Atlantic from Labrador to Texas, with keys for their identification.

FORBES, S. A., and R. E. RICHARDSON. The fishes of Illinois. State of Illinois, Dept. of Registration and Education, Natural History Survey Division, Urbana, Ill., 2nd ed., 1920.

As the fish fauna of Illinois is quite similar to that of Ontario, this publication, which contains many fine coloured illustrations, will be found very useful in the study of our fishes.

HALKETT, A. Check list of the fish of the Dominion of Canada and Newfoundland, Government Printing Bureau, Ottawa, 1913, out of print.

This list of Canadian fishes contains brief notes on the habitat and distribution of the different species.

JORDAN, D. S. Fishes. Appleton, 1925, $7.50.

"In this volume the writer has tried to compress all that an educated man is likely to know or care to know about fishes . . . . each one of the food and game fishes of the United States is treated with considerable fullness." Contains numerous illustrations, some of them quite good coloured ones of common game species.

JORDAN, D. S., and B. W. EVERMANN. American food and game fishes. Doubleday. Out of print.

"A popular account of all the species found in America north of the equator with keys for ready identification, life histories and methods of capture." Many illustrations, several in colour.

SAGE, DEAN, C. H. TOWNSEND, H. M. SMITH, and W. C. HARRIS. Salmon and trout. Macmillan, $2.00.

The game fishes of Canada, a 45-page booklet illustrated by 15 coloured plates, published by Canadian Pacific Railway, Montreal, in collaboration with the Royal Ontario Museum of Zoology and Department of Biology, University of Toronto.

Deals with the species of game fish mainly from the angler's point of view.

Guide to the game fishes of Canada. Royal Ontario Museum of Zoology. 10 cents.

A 20-page pamphlet giving brief descriptive accounts of the game fish of Canada with a short statement of methods of conservation.

INSECTS

The most generally useful book to one interested in insects is Lutz's "Field book of insects", listed below. This is not only the best book for beginners in entomology, but will be found invaluable to the advanced student as well.

BROWNE, FRANK BALFOUR. Insects: an introduction to entomology. Benns sixpenny library, 15c.

BROWNE, FRANK BALFOUR. Insects. Nelson (Home university library), $1.00.

A general introduction from the biological point of view.

COMSTOCK, J. H. Insect life, an introduction to nature study and a guide for teachers, students and others interested in out-of-door life. Appleton, 1901, $4.00.

"A brief discussion of insects as a group, followed by a table for separating the different orders and accounts of insects occurring in typical environments, such as pond life, brook life, etc., and excellent directions for the collection, preservation and rearing of specimens."

COMSTOCK, J. H. An introduction to entomology. Comstock Pub. Co., $6.00.

A general treatise on entomology; includes two parts. Part I, includes chapters on the characteristics of insects and their near relatives, the external and internal anatomy of insects and their transformations. Part II treats of the classification and life histories of insects. It is a revision and expansion of the "Manual for the study of insects."

COMSTOCK, J. H., and A. B. COMSTOCK. Manual for the study of insects. Revised edition, Comstock Pub. Co., $4.00.

"Designed to meet the needs of teachers in the public schools and students in high schools and colleges. The book is so written that any intelligent teacher can find out for himself the more important facts of insect life. Its most distinctive feature is a series of analytical tables by means of which the family to which any North American insect belongs can be determined."

FABRE, J. HENRI (1823-1915). Souvenirs entomologiques.

The great French entomologist has been described as the "insects' Homer". His books, describing the habits of insects, are written in such a charming literary style that they are among the most popular of natural history works, and have been translated into many languages. "He is, indeed, so pre-eminent in the wealth and precision of his observations, in the ingenuity of his experimentation and in literary expression, that his *souvenirs* will always endure." Darwin referred to him as "a savant who thinks like a philosopher and writes like a poet."

The following of Fabre's books are published by Dodd, Mead and Co., at $2.00 each,— The life of the spider, The life of the fly, The mason-bees, Bramble-bees, and others, The hunting wasps, The life of the caterpillar, The life of the grasshopper, The sacred beetle, and others, The mason wasps, The glow worm and other beetles, More hunting wasps, The life of the weevil, More beetles. The life of the caterpillar is also published in Macmillan's modern library, and The life of the spider in Hodder and Stoughton's People's library.

FABRE, J. H. Insect adventures. Dodd, $2.50.

The young people's Fabre; "All manner of fascinating things are introduced to the child reader in a delightfully whimsical manner."

FABRE'S Book of insects. Dodd, $2.50.

Selected material from Fabre's famous books, illustrated by E. J. Detmold.

FELT, E. P. A popular guide to the study of insects. Handbook 6, New York State Museum, Albany, 1929, 50c.

The title accurately describes this 147-page handbook. It contains lists of references to books and other literature on the various groups of insects.

FOREL, AUGUSTE H. The social world of the ants compared with that of man. 2 vols., Putnam, 1929, $15.

May remain a classic.

HERRICK, G. W. Manual of injurious insects. Holt, 1925, $4.50.

HERRICK, G. W. Insects injurious to the household. Macmillan, 1926, $3.00.

HOLLAND, W. J. The butterfly book. Doubleday, $5.00.

HOLLAND, W. J. The moth book. Doubleday, out of print.

HOLLAND, W. J. The butterfly guide. Doubleday, cloth $1.25, imitation leather $1.50.

A pocket manual for the identification of the commoner species found in the United States and Canada; 295 figures in colour illustrating 255 species.

HOWARD, L. O. The insect book. Doubleday. Out of print.

HUXLEY, J. S. Ants. Benn's sixpenny library, No. 142, 15c.

KELLOGG, V. Insect stories. Appleton, 1923, $2.00.

"In simple language, tells the story of how they live and what they do. The habits and actions of these tiny lives he writes of in delicate, story-like form, and with a vein of humour which is delightful."

LUTZ, F. E. Field book of insects; with a special reference to those of northeastern United States, aiming to answer common questions. Putnam (Nature field books), 1917, $3.50.

"A comprehensive, popular account giving directions for collecting and preserving insects and a great many interesting facts respecting our large series of insects grouped in their respective orders, together with keys for the recognition of some of the more characteristic species and the more important groups. It is somewhat systematic in arrangement and contains a large amount of general information. It is an excellent guide or field book illustrated by 24 coloured plates and numerous text figures."

LUTZ, F. E. How to collect and preserve insects. American Museum of Natural History, New York. 10c.

MIALL, L. C. The natural history of aquatic insects. Macmillan, 1922, $1.50.

An excellent introduction to the study of aquatic insects.

SANDERSON, E. D. Insect pests of farm, garden and orchard. 2nd ed., revised and enlarged by L. M. Peairs. Wiley, 1921, $4.50.

WHEELER, W. M. Ants, their structure, development and behaviour. Columbia Univ. Press, 1910, $7.50.

WHEELER, W. M. Social life among the insects. Harcourt, 1923, $4.00.

An exceedingly interesting, comprehensive, philosophical account of social insects and their habits.

WHEELER, W. M. Foibles of insects and man. Knopf, 1928, $5.50.

An interesting book making general philosophical comparisons between men and insects.

SPIDERS

COMSTOCK, J. H. The spider book. Doubleday.

FABRE, J. H. The life of the spider. Hodder and Stoughton, People's library.

PATTERSON, A. J. The spinner family. McClurg, $1.75.

INVERTEBRATES

PRATT, H. S. Manual of the common invertebrates, exclusive of insects. McClurg, 1916, $5.00.

AQUATIC LIFE

BOULENGER, E. G. The aquarium book. Appleton, 1926, $3.50.

The author is director of the Aquarium of the Zoological Society of London. The book gives in popular language an account of the life histories and habits of all those inhabitants of ponds, rivers and oceans that have been kept in captivity at the Zoo and elsewhere. It discusses many of the problems that arise in aquarium management.

FURNEAUX, W. Life in ponds and streams. Longmans, 1919, $2.25.

Although written for the student of fresh-water life in England, will be found useful by anyone interested in the study of aquatic organisms.

MIALL, L. C. The natural history of aquatic insects. See under INSECTS.

MORGAN, A. Field book of ponds and streams. Putnam (Nature field books), 1930, $3.50.

An excellent introduction to the plants and animals of fresh water and the conditions under which they live.

NEEDHAM, JAS. G., and PAUL R. NEEDHAM. A guide to the study of freshwater biology. American Viewpoint Soc., 1927, $1.00.

An elementary field handbook for the student of fresh-water biology. Contains keys and pictures by means of which the commoner organisms living in fresh water may be identified.

NEEDHAM, J. G., and J. T. LLOYD. The life of inland waters. American Viewpoint Soc., 1915, $3.00.

An account of fresh-water life,—its forms, its conditions, its fitnesses, its associations and its economic possibilities.

WARD, H. B., and G. C. WHIPPLE. Fresh-water biology. Wiley, 1918, $7.00.

A manual for the student of fresh-water organisms; contains keys for the identification of various groups of microscopic plants and animals and also of the larger invertebrate groups such as leeches, crustaceans and molluscs.

THE SEA AND SEASHORE

ARNOLD, A. F. The sea-beach at ebb tide. Century, 1916, $5.00.

Will help one to identify the marine algae and invertebrates found on the beach of the Atlantic coast. Technical phraseology has been avoided as much as possible.

FLATTELY, F. W., and C. L. WALTON. The biology of the sea-shore. Macmillan, 1927, $5.50.

"The main idea underlying the present work is to treat the plants and animals inhabiting the seashore from the ecological standpoint . . to demonstrate the influence of the environment upon their structure, functions, habits and general reactions." Chiefly British species are treated.

JOHNSON, MYRTLE E., and HARRY J. SNOOKS. Seashore animals of the Pacific coast. Macmillan, $7.50.

The best popular guide to seashore invertebrates of the west coast.

MINER, R. W. Field book of seashore life. Putnam (Nature field books).

MURRAY, SIR JOHN. The ocean. Nelson (Home university library), $1.00.

A general account of the science of the sea; methods and results, the depths, temperatures, tides, currents and plant and animal life in the ocean.

RUSSELL, F. S., and C. M. YONGE. The seas. Warne, London, 12/6.

Our knowledge of life in the sea and how it is gained; one of the latest volumes on the subject.

AQUARIA

HODGE, A. E. Vivarium and aquarium keeping for amateurs. Witherby, London, 5s.

A practical guide to the keeping of animals in vivaria and aquaria.

INNES, W. T. Goldfish varieties and tropical aquarium fishes. Innes, Philadelphia, $4.00.

Deals with the principles of aquarium management and describes the numerous kinds of fishes which may be kept in aquaria.

INNES, W. T. The modern aquarium. Innes, Philadelphia, $1.00.

An illustrated handbook which explains the principles of aquarium management.

MELLEN, I. M. Fishes in the home. Dodd, 1927, $2.00.

The author is a member of the staff of the New York Aquarium. Deals with the establishing and maintenance of an indoor aquarium. The first section of the books deals with aquarium plants, water changes, tadpoles, and snails, goldfishes (their breeding, food and care), killyfishes, darters, sunfish, etc. The second section is devoted to a discussion of tropical toy fishes, the salt water aquarium, and the construction of small aquarium and garden pools.

Schoolroom aquaria. Bureau of Publications, Teachers' College, Columbia University, N.Y., 25c.

NATURE STUDY

COMSTOCK, ANNA B. Handbook of nature study. Comstock Pub. Co., 20th ed. $4.00.

Widely used as a textbook of nature study; "covers the entire field, including birds, insects, animals, large and small, tame and wild, fishes, flowers, plants, trees, and weather, and 'the friendly stars'".

MANUALS

JORDAN, D. S. Manual of the vertebrate animals of the northeastern United States. World Book Co., Yonkers, N.Y., 13th ed., 1929, $4.00.

The fact that this manual has gone through thirteen editions during the past fifty years indicates the esteem in which it is held. It contains keys for the identification of all vertebrates found in the area dealt with, including marine forms. It will be found extremely useful by anyone interested in natural history work in eastern Canada.

PRATT, H. S. A manual of the land and fresh-water vertebrate animals of the United States (exclusive of birds). Blakiston, 1923, $6.00.

As its title indicates, this manual does not deal with birds or marine animals. It covers western America, as well as the east, and like the former, is useful to the Canadian naturalist.

FAULL, J. H. (Editor). The natural history of the Toronto Region, Ontario, Canada. The Canadian Institute, Toronto, 1913, $2.00.

This valuable work contains short accounts by various writers of the history, geology, climate, life zones, flora and fauna of the Toronto region.

NATURAL HISTORIES

The new natural history, by J. Arthur Thomson. 3 vols., Putnam, 1926, $6.00 each volume.

"These volumes are outstanding in beauty and charm. Even an illiterate person would look through them with amazement, entranced by the 47 full-page colour plates and more than 1,500 photographs."

The royal natural history, edited by R. Lydekker. 6 vols., Warne, London, 63s.

"Comprehensive in scope, accurate in detail, and fully and truthfully illustrated."

Wild life of the world, by R. Lydekker. 3 vols., Warne, London, 63s.

A descriptive survey of the geographical distribution of animals; illustrated with over 600 engravings from original drawings and 120 studies in colours.

The Cambridge natural history. 10 vols., Macmillan, $6.25 each volume.

This is not a "popular" natural history illustrated with coloured plates, but a systematic review of the various groups in the animal kingdom arranged in taxonomic order; the standard scientific natural history.

The outline of science, edited by J. Arthur Thomson. 4 vols., Putnam, $4.50 per volume.

Vol. I contains chapters on the romance of the heavens, the story of evolution, adaptations to environment, the struggle for existence, the ascent of man, evolution going on, the dawn of mind and foundations of the universe; a thoroughly authoritative and at the same time simple statement of the results of research on the various problems discussed.

NEWS NOTES

The trustees of the Royal Ontario Museum have announced that they are about to proceed with the erection of the much-needed addition to the museum building. The new wing will face on Avenue Road and the plans provide for approximately 134,000 square feet of floor space which will more than double the present floor space devoted to exhibition. It will also provide for lecture room and increased laboratory and storage facilities.

The Museum's natural history survey of the province is being continued. During the summer of 1929 the Rainy River district was investigated and found to be an intensely interesting one. An unusually wide variety of birds and mammals was found, including not only those of the northern forest, but also the forms characteristic of cleared farming country. Eastern species were the most numerous, but there appeared to be an increasing percentage of western prairie forms moving in as the country becomes cleared. During the present summer, a party consisting of Messrs. Snyder, Kurata, Logier, Baillie and Stovell has studied the fauna of Prince Edward County, Ontario.

Contribution No. 3 of the Museum, being A Faunal Investigation of King township, York county, Ont., will appear shortly.

Mr. J. H. Fleming, Honorary Curator of Ornithology of this Museum, attended the Seventh International Ornithological Congress in Amsterdam, June 1-7, as a delegate of the American Ornithologists' Union.

The Museum has received as a gift from Mrs. Jonathan Dwight, New York, 160 colour drawings of the soft parts of birds (feet, bills, etc.), by Allan Brooks. Other notable donations recently received include mounted Impala head from Dr. J. W. Inches of Detroit; complete set of "Transactions of Ottawa Field-Naturalists' Club", its successor, the "Ottawa Naturalist", and its successor, the "Canadian Field-Naturalist", (1879-1929) from Wallace Havelock Robb; two passenger pigeons from Mr. Paul Hahn, bringing the number of these specimens which Mr. Hahn has donated to twelve; Major Allan Brooks was instrumental in having donated to the Museum a collection of 145 specimens of California birds from Dr. W. D. Strong, of Lincoln, Neb. Many other valuable specimens have been donated by other friends of the Museum.

ROYAL ONTARIO MUSEUM OF ZOOLOGY

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ADMISSION

The Museum is open from 10 a.m. to 5 p.m. all week-days except Christmas Day and the morning of New Year's Day. It is also open Sunday from 2 p.m. to 5 p.m.

Admission is free Sunday, Tuesday, Thursday, and Saturday, and on all public holidays. On other days the admission fee is fifteen cents.

University students are admitted without charge on presentation of their registration cards.

All classes from the schools, art students, and study groups, are admitted free.

Additional copies of this bulletin may be obtained, free, from the Department of University Extension, University of Toronto, Toronto 5, Canada.